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September 11, 2002

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W., TW-A325
Washington, DC 20554

Re: **Ex Parte** Submission in WT Docket No. 02-100

Dear Ms. Dortch:

On August 22, 2002, Cingular Wireless held an ex parte meeting with members of the Wireless Telecommunications Bureau to address issues related to the above referenced proceeding. The staff raised several questions during this meeting that which are being further addressed in enclosed materials accompanying this submission. The documentation includes a status and summary of efforts to identify and mitigate potential interference with the Anne Arundel County's Radio System. It also contains an assessment of how the Anne Arundel County Ordinance can negatively impact the citizens of Anne Arundel County, Maryland, and will jeopardize the quality of the CMRS services provided by Cingular Wireless and other CMRS carriers in the county.

According to Anne Arundel County, the Ordinance is effective today, September 11, 2002. Beginning today the County expects carriers to submit certifications -- from an engineer approved by the County -- that the continued operations of existing sites "will not degrade or interfere with the County's public safety communication systems." The County was asked, but declined, to stay the effectiveness of the Ordinance pending the FCC's action on Cingular's Petition for a Declaratory Ruling (filed April 23, 2002) which asks the Commission to confirm states that the Communications Act preempts the authority of the County to impose this burdensome obligation.

It is essential that the FCC take expedited action on Cingular's petition. If Anne Arundel County initiates enforcement action against non-complying carriers, the FCC will become embroiled in litigation before various courts that will involve the same issues raised in the Petition -- whether the County has jurisdiction to regulate the use of radio spectrum and resolve radio frequency interference disputes.

Sincerely,

Brian F. Fontes
Vice President-Federal Relations

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Attachments

CC: Gary Oshinsky
Jeffery Steinberg
Jeanne Kowalski

Federal Preemption of Anne Arundel County Ordinance

WT Docket No. 02-100

Resolving interference to public safety systems, where Cingular Wireless ("Cingular") may be a potential contributor, is of utmost importance for Cingular. Cingular maintains an internal public safety web site with a link to the APCO Project 39 web page that is regularly reviewed for new information and potential interference cases. In addition, Cingular subscribes to the General Discussion List Server 800interference@yahoogroups.com for current information. Where interference issues have been identified, Cingular relies extensively on the Best Practices Guide ("BPG") to facilitate the resolution of interference issues.

Cingular has been identified as possibly contributing to public safety interference in six markets across the country. In three of the markets, the public safety agencies were unaware of any interference concerns related to Cingular when contacted by a Cingular representative. In a fourth market, the source of interference was identified and found by Cingular personnel to be Indiana Department of Transportation surveying equipment. In the fifth market, Kauai, Cingular has started an investigation into potential interference. Finally, in Anne Arundel County (AAC), Maryland, Cingular has been working with AAC to mitigate interference identified by AAC. This activity is summarized below.

When Cingular learns it may be a possible contributor to public safety interference, the appropriate Cingular Radio Frequency ("RF") Director responds immediately by personally contacting the relevant parties. If it is determined that Cingular is contributing to the interference, then Cingular consults the BPG. If necessary, Cingular will modify the network to mitigate interference. Examples of mitigation efforts include modifying radiation patterns, employing tighter beamwidth antennas, reducing power, reducing local antenna pattern power levels, checking output power settings and verifying proper functioning of equipment via alarm logs. Cingular has found the BPG to be very beneficial in resolving interference matters.

Anne Arundel County

With respect to the specific interference issues in AAC, Cingular established a working relationship with AAC's technical staff and outside consultants to help resolve all public safety interference issues. Cingular uses information from AAC's county-wide drive tests that identifies and documents interference areas. This effort generates an "interference matrix" which is used by Cingular to work with AAC and coordinate with other carriers (predominately Nextel) to mitigate and resolve any Cingular interference contribution. Cingular also designated a primary RF Engineering contact who is involved in regular calls and meetings with AAC technical staff and outside consultants. Additionally, Cingular coordinates its resolution and testing with Nextel at co-located sites to ensure re-testing efforts are as efficient as possible.

Specifically, the following is a list of efforts Cingular has implemented to reduce or eliminate problematic interference:

- Provide site data for county interference matrix
- Support interference location testing with the following tools and procedures
    - Test procedure
    - Complete test log
    - Troubleshoot interference causing mechanism with AAC and other carriers
    - Check transmitter output power
    - Configure site(s) into worst case mode (all radios keyed up)
    - Evaluate all areas around Cingular site(s)
    - Provide the following data at test time:
        - number of channels
        - antenna tilt, azimuth, model
        - power levels
        - control channel frequencies
    - Record radio desense amount, old & new radio audio quality, and interference location distance from site using laser rangefinder
    - Support re-tests after performing site interference modifications

Optimize site configuration for reduced interference before testing. This includes:

- Local power level / antenna pattern calculations
- Drive testing
- Antenna swaps
    - Get owner approval
    - Purchase antenna
    - Manage work orders
- Uptilt
- Power reductions

- Support conference calls, planning and test dates with AAC, Nextel and Verizon
- Notify AAC of new sites and when they are operational
- Coordination of interference benefiting site selection (e.g., Eastport water tank)
- Produce after testing:
    - Solution evaluation
    - Drive tests
    - Power reduction statistic evaluations
    - Antenna swap work orders
    - Permanent power reductions
- Employ an internal web site with information for interference tracking

Best Practices Guide:

Cingular follows the *BPG* to resolve potential interference to public safety in AAC. Coordinating with AAC on identified interference locations is obviously a high priority. Cingular strives to understand the interference mechanisms at work in each location and works to reduce current interference to AAC public safety radios as AAC prepares to modernize its communication system over the next two years. As needed, Cingular is modifying radiation patterns, employing tighter beamwidth antenna, reducing power, reducing local antenna pattern power levels, checking output power settings and verifying proper functioning equipment via alarm logs. No sideband noise sites have been identified. Cingular has designed new sites with local interference reduction in mind (including small tilt and tight beamwidth antenna techniques).

Processes and Procedures for Mitigating Interference:

As mentioned earlier, interference queries are directed to the Cingular RF Director working in coordination with the RF Engineer assigned to handle interference issues. Specific responsibilities include, but are not limited to, coordinating responses, answering questions, providing configuration data, supporting on-site testing, requesting network evaluations and initiating change orders. An interference site folder is created to collect all data gathered as part of interference evaluation and response.

An example of the testing plan and documentation is attached:

AACo Test Procedure v2.doc

In addition to formal meetings with AAC, Cingular has initiated ad hoc conference calls with the other licensed carriers, equipment vendors, and AAC to help coordinate, discuss, and resolve each problem. In addition, Cingular developed the test plan and procedures (attached above) to better organize the coordinated tests and provided documentation of the results.

Cingular's local network operations team is further supported in these efforts by Cingular Headquarters network management team (located in Atlanta, Georgia). This team provides support, consultation and guidance to the local market network operations team to assure that interference remedies are found and that these remedies do not have an adverse affect on the network.

Due to the receivers deployed by the AAC, Cingular's operations were contributing to the interference experienced by the county in a limited number of instances. From Cingular's analyses, it is evident that Nextel appears to be the primary interference contributor (see table below) in AAC. Cingular has successfully mitigated interference through its designs and modifications to reduce the near-field energy that was the main source of Cingular's contribution to the interference

problem. Cingular has already addressed and resolved half of the areas that AAC identified. The rest of the areas have modifications and retesting scheduled. There is only one case where the initial design remedy has not yielded expected results – Speedway cell site. Cingular continues to work on this site and has other mitigation options to explore. Cingular has successfully resolved its interference contribution at one of the locations AAC thought Cingular would not be able to mitigate - the Annapolis Docks. In addition, Cingular's design and modifications at the Naval Academy site were successful, while Nextel continues to be the primary source of interference with public safety at this site.

In summary, when the process started, the AAC identified Cingular as being responsible for 23 interference locations within AAC. Upon further investigation, it was discovered that the interference was the result of the receivers utilized by the AAC with respect to its public safety system. Nevertheless, Cingular has completely mitigated interference to the county receivers at 12 of the 23 locations. At the remaining sites, Cingular has one site where modifications are being designed, has one site currently being modified, and has nine sites waiting testing of the solutions.

The table below reflects a breakdown for the interference cases in AAC:

Nextel Only	
Mitigated	24
Problems, Looking at	11
To Test	1
Partial Mitigation	2
Cingular Only	
Mitigated	6
Problems, Looking at	0
To Test	1
Partial Mitigation	0
Verizon Only	
Mitigated	0
Problems, Looking at	0
To Test	0
Partial Mitigation	0
Joint	
Nextel & Cingular Mitigated	3
Nextel & Cingular To Test	8
Nextel Problems, Cingular Mitigated	2
Partial Nextel & Cingular Mitigation	1
Nextel & Cingular Problems	1
Verizon & Cingular Mitigated	0
Verizon & Cingular To Test	0
Verizon Problems, Cingular Mitigated	0
Verizon & Cingular Mitigation	0
Verizon & Cingular Problems	1

Impact of the Anne Arundel County Ordinance

The AAC ordinance will have a significant impact on Cingular's ability to provide quality service to its customers and the citizens of AAC. Under the ordinance, carriers must abide by the following:

Carriers must certify that all existing, new, and modified cell sites will not degrade or interfere with the AAC Public Safety System, *i.e.,* no interference potential. This amounts to a warranty that Cingular's systems cannot, under any circumstance, interfere with the AAC public safety radio system. Interference is never defined, however, in the ordinance. It is inconceivable that an independent consultant could make such a certification, particularly in light of AAC continued use of older public safety radio equipment and the non-existence of an "interference" standard.

The ordinance also precludes the use of an "independent" consultant by mandating that carriers: "Shall submit a certification from an engineer acceptable to the Director of the Department of Inspections and Permits of the radio frequency radiation actually measured from the facility." By mandating that carriers utilize exclusively "an engineer acceptable" to the county, a carrier's ability to obtain certification is limited and objectivity is compromised.

The AAC believes that the first interference certifications are due September 11, 2002. On this date, CMRS carriers must provide the aforementioned certification for all existing cell sites in order for the sites to continue operating. Absent this certification, AAC may order Cingular to stop transmitting and to remove the remaining 11 cell sites that are in the process of undergoing modification or awaiting testing. Obviously, if Cingular is forced to turn down these cell sites large coverage gaps would be created throughout AAC causing poor service to the public and impeding the ability of the public to make emergency calls.

Second, the ordinance requires additional certifications for new cell sites and modifications to existing cell sites. Compliance with these certifications will delay site turn up. AAC certification may never be

granted for a cell site and service to customers will be severely degraded. Furthermore, modifications to these cell sites in order to comply could significantly alter the original design objectives spurring additional site development that would need certification. This is particularly important because the Ordinance is unilateral – applying to wireless carriers and not public safety licensees. As AAC modifies and updates its public safety radio system, interference may occur with existing "certified" sites or sites proposed for certification according to network plans. The result could be a constant "de-certification" of existing cell sites.

A third certification requirement is contained in the ordinance that requires carriers to do field testing to measure signal levels as part of an annual emissions certification. Again, Cingular (and other FCC licensed carriers) is at risk of violating the AAC Ordinance for those cell sites that have not had any field verification testing with AAC.

As Cingular believes that the certification requirements of the ordinance are preempted by the Communications Act and is the subject of Cingular's Petition for a Declaratory Ruling pending before the FCC, Cingular will not be providing any of the certifications. Thus, as early as September 12th, AAC may attempt to shut down Cingular cell sites. In such an event, the FCC will be brought into litigation that will involve the same issues raised in the Petition. Accordingly, expedited action on Cingular's Petition is requested.

Attempting to comply with the current certification process is guaranteed to increase expense and time delays associated with improving and upgrading Cingular's network – including the deployment of advanced technologies. Ultimately, consumers will be harmed.

AACo 800 MHz Interference Test Procedure

Test Objectives:

Observe the operation and performance of Anne Arundel County Police handheld radios in the vicinity. Then try to determine the power levels needed on the street to achieve reduced interference. These changes will be observed in conjunction with other carriers with strong signal levels in the vicinity.

Background:

Close Operational Frequencies:
The Anne Arundel County Police Department and Cingular Wireless have radio frequency equipment that operates in close proximity to each other in the frequency spectrum. In particular the Anne Arundel County Police Department operates in the following frequencies:

Uplink (MHz)	Downlink (MHz)	Service
811.3625 – 815.4125	856.3625 – 860.4125	SMR

Cingular Wireless Washington / Baltimore operates cellular phone service in the following frequency bands:

Uplink(RX) (MHz)	Downlink(TX) (MHz)	Service
824.0000 – 825.0000	869.0000 – 870.0000	Cellular A''
825.0000 – 835.0000	870.0000 – 880.0000	Cellular A
845.0000 – 846.5000	890.0000 – 891.5000	Cellular A'

Preparatory Work:
Arundel County should establish where the interference is being observed. This in turn will allow Cingular to evaluate what site and what sectors may be causing interference problems. After evaluation of the site data Cingular may initiate site modifications prior to testing if certain changes would have make an obvious improvement to the interference before the first testing. If changes are not obvious then a joint test will be necessary. Subsequent modifications will then require follow-up testing.

Antenna pattern analysis should evaluate if there would be a reduction of Cingular's signal level near the test point given a configuration change. Figure 1 below shows in detail the anticipated differences in signal strength at an example cell site with an antenna swap.

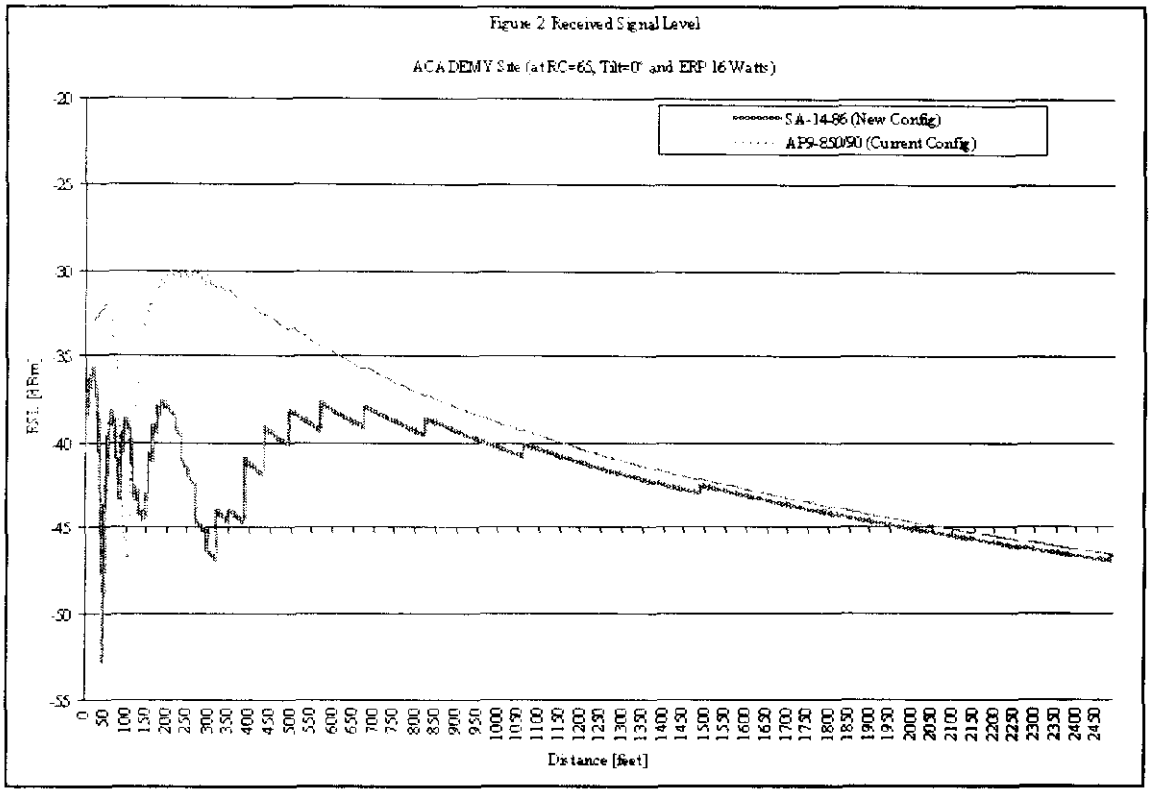

Figure 1 – Cingular's RSSI vs. Distance from cell site

Between 250 and 450 feet from the cell site the received signal strength will drop anywhere from 12 to 25 dBm.

Cingular will come to the testing with the configuration site details:

Current Configuration:	Sector 1	Sector 2	Sector 3
ERP	40 W	40 W	100 W
Tilt	0 Deg.	0 Deg.	0 Deg.
Height	65 ft.	65 ft.	65 ft.
Azimuth	0 Deg.	120 Deg.	240 Deg.
Antenna	AP9-850/090	AP9-850/090	AP9-850/090

Test Procedure:

The test team will consist of representatives from Anne Arundel County, RCC, Cingular Wireless and any other contributing carrier. Anne Arundel County would be responsible for making test measurements while the carriers will be responsible for controlling their respective cell sites in the vicinity. The test will be performed during the late evening, 11pm-2am when Cingular Wireless has an open maintenance window to their respective site.

AACo is to provide the test van as shown in Figure 2. The radios and equipment setup in the van are shown in Figure 3. The mobile radios positioned in the van would be connected to antennas mounted on top of the roof of the van. The roof mounted antennas approximate height was 7 feet.

Figure 2 – Test Van and Location

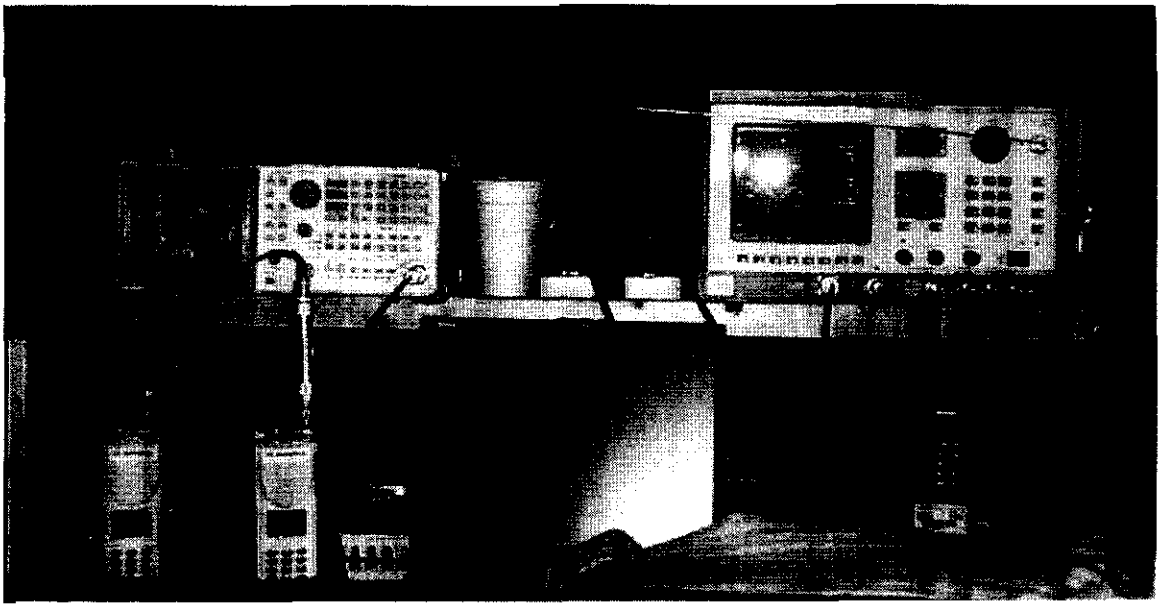

Figure 3 – De-Sense Measurement Equipment

The County will carry the older STX (black color) and new XTS (yellow color) by hand around outside the test van during the test. These handhelds will simulate the "on the street" performance of the radios. The hand held units will be moved back and forth in order to get an average sense of the radios performance. A movement of 1 foot could change the reception quality significantly.

The following test items are described in detail for the successful implementation of an interference test.

Test Log:
In general all information collected during the test will be entered on the Cingular Interference Test Log. This sheet prompts the test engineer for most of the necessary information needed for evaluating interference remedies. This log is included on the last page of this procedure.

De-Sense Measurement:
The De-Sensivity test setup consisted of the following equipment
1. 1 Motorola XTS3000 Portable (future radio, Yellow color)
2. R-2570 Communications Analyzer

One measure of the amount of disruption to a radio is through the de-sensitivity measurement. De-sensitivity determines the amount of extra good signal that must be present in for proper operation of a radio in the presence of unwanted signals. Figure 4 shows the basic setup of the De-Sense measurement technique as was used in this test.

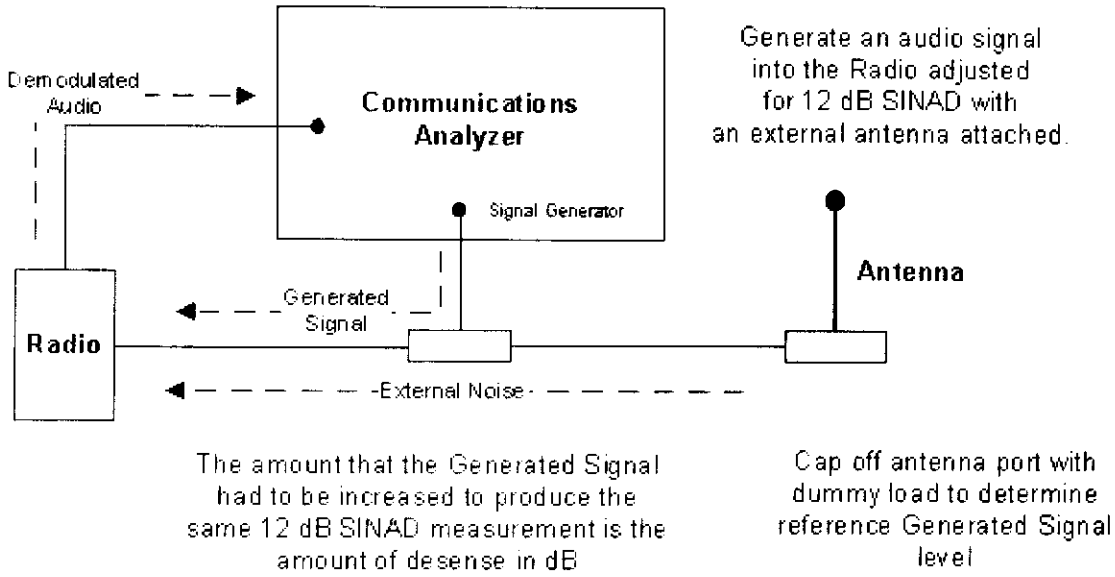

Figure 4 – De-Sensitivity Measurement Test Setup

To measure the amount of De-sense two measurements must be made. Both hinge upon the Communications Analyzers ability to measure SINAD. SINAD is defined as follows:

SINAD = signal to noise and distortion ratio.
The ratio of the input signal to the sum of noise and harmonics (i.e interference):

$$SINAD = 20 \log (Signal / (Noise + Harmonics)$$

Thus to measure De-Sense the following two measurements must be made:

1) First the Reference Signal Level is determined. This is done by capping off the antenna port so that no external noise is subjected to the radio. The audio signal coming out of the radio is then measured by the Communications Analyzer. The amount Generated Signal that is required to achieve 12 dB SINAD determines the Reference Signal Level.
2) Second the antenna is connected to the setup and the Generated Signal is turned up until the 12 dB SINAD point is achieved by the radio once again.

The screen shot shown in Figure 8 shows the measurement of the Reference Signal. The "Output Lvl" corresponds to the Reference Signal Level. Also reference Motorola Interference Technical Appendix Page 6-7.

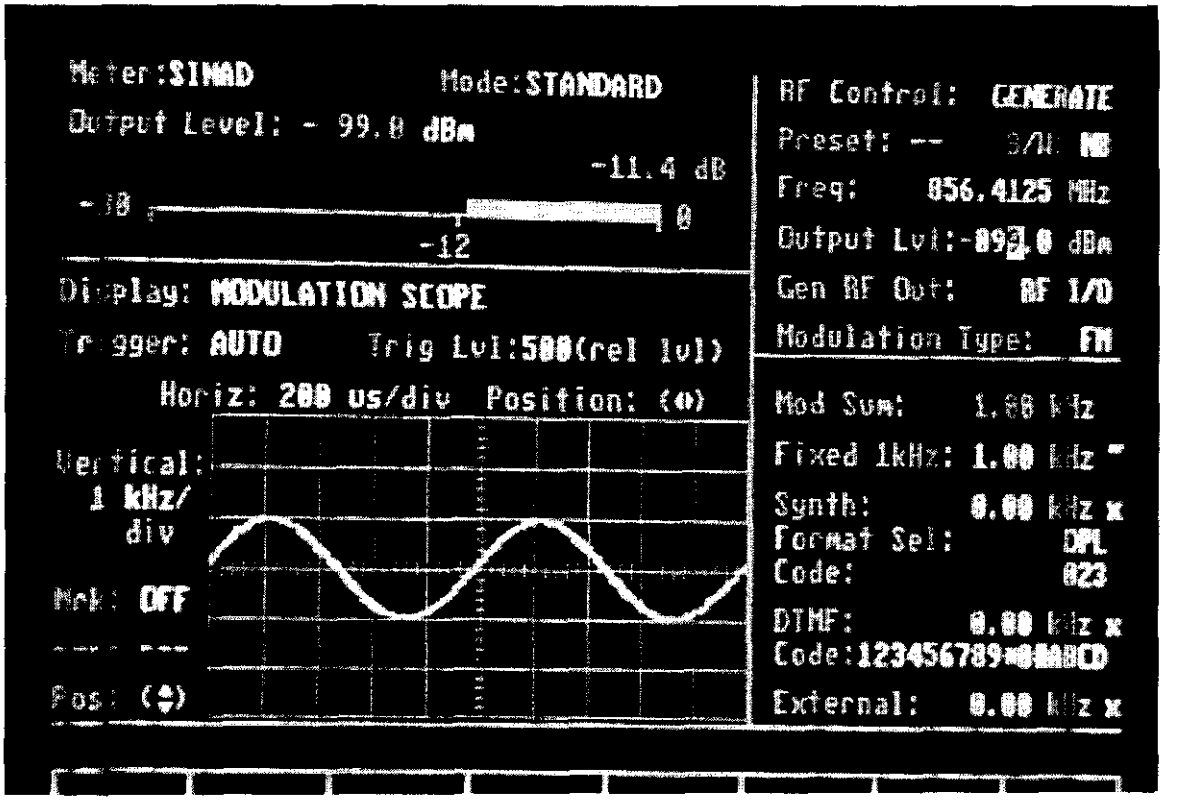

Figure 5 – Communications Analyzer Actual Screen Shot

Audio Quality Measurement:
To determine the receive audio quality of the mobile radios used in the area the County transmitted a generic audio recording over one of their base stations. This audio can be heard in the audio recordings sent separately from this report. Each mobile radio involved in audio quality testing was tuned into this signal.

The test bench contained two radios for listening to the audio quality
1. 1 Motorola STX (existing fleet radio, Black color)
2. 1 Motorola XTS3000 Portable (future radio, Yellow color)

The walk around radios consisted of the following radios
3. 1 Motorola STX (existing fleet radio, Black color)
4. 1 Motorola XTS3000 Portable (future radio, Yellow color)

Cingular Wireless Configuration:

The Cingular Wireless test setup will consist of the operational cell site. Cingular Wireless has implemented Flexible Channel Assignment (FLCA) for most radios in their network. This is a mode whereby the cell sites determine which channels to transmit on based upon a local scan of interfering channels. Running FLCA mode at the cell site automatically created a group of channels that were best determined to run at the site. This group of channels is called the "Short List". The short list is semi stable over time.

During testing only the Short List channels were used. In addition the radios were taken out of the FLCA mode so that the channels numbers would be fixed during the testing. Thus the radios were using FLCA channels but in manual mode.

Distance to Cell Site:

At some point during the testing, the distance to the contributing cell site shold be determined. This is typically done using a lase range finder. This distance data is later used for evaluating site changes and the predicted signal levels at the interference locations.

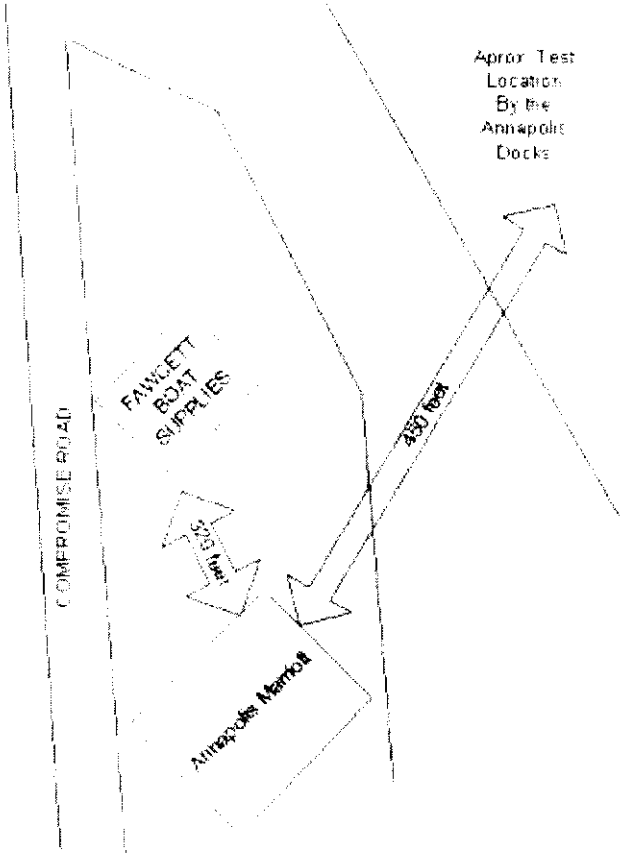

Figure 6 – Test Location and distances

Signal Strength Measurement:

The signal strength of the public safety simulcast signals and all suspected carriers at the test location is measured using a spectrum analyzer located in the test van.

Test Sequence:

If two carriers are suspected interferers, then the following rough outline could be used for narrowing in on the causes of the interference:

```
1) Find worst location
2) All carriers off to measure baseline interference
3) All carriers keyed on
4) Find worst location

if necessary then:
5)    Cingular Only / debug
6)    Nextel Only / debug
7)    All on / debug
```

Cingular Wireless Interference Test Log Date:

Site Page:

Audio Quality: % time blocked, % static

Time	Location #	Test Description	Desense	STX [old radio] Audio Quality / Channel	XTS Audio Quality / Channel	PSR RSL	Carrier RSL	Notes

Carrier & Site:

Sector	ERP	Control Channel (freq)	Radios Analog	Radios Digital
1				
2				
3				

Carrier & Site:

Sector	ERP	Control Channel (freq)	Radios Analog	Radios Digital
1				
2				
3				

Public Safety Radio Test Channels:

Desense:	Freq	Audio:	Freq
Desense1 Channel:		Audio1 Channel:	
Desense2 Channel:		Audio2 Channel:	

Locations:

Number	Dist. To Site	Description

3 6/19/2002